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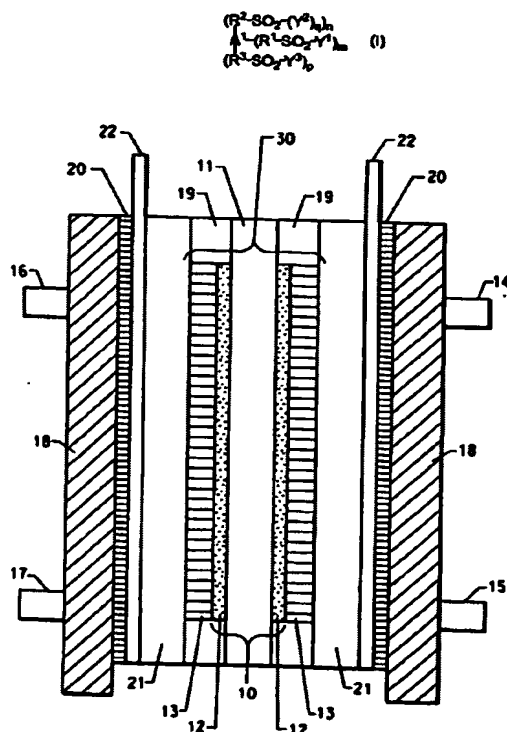
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(54) Title: SULFONIMIDE CONTAINING COMPOUNDS AND THEIR USE IN POLYMER ELECTROLYTE MEMBRANES FOR ELECTROCHEMICAL CELLS



(57) Abstract: A compound having the general structure (I), wherein A_{417} is a monovalent, divalent, or trivalent aromatic heterocyclic group comprising heterocyclic rings; R_{417} , R_{427} , and R_{437} are divalent fluorinated groups; m , n , and p are 0 to 3, with the proviso that $m + n + p$ is equal to 1, 2, or 3 so that the carbon atoms of the heterocyclic rings are fully substituted by acidic fluorinated sulfonyl-containing groups; q is 0 or 1; Y_{417} is $-OH$, $-NH-SO_2\#191-R_{447}$ wherein R_{447} is a monovalent fluorinated group, $-NH-$, $-NH-SO_2\#191-R_{457}-SO_2\#191-NH-$, or $-NH-SO_2\#191-R_{467}-A_{427}-R_{477}-SO_2\#191-NH-$, wherein A_{427} is a divalent heterocyclic group and R_{457} , R_{467} , and R_{477} are divalent fluorinated groups; and Y_{427} and Y_{437} are $-OH$ or $-NH-SO_2\#191-R_{447}$; with the proviso that when m and n are each equal to 1, p is 0 to 1, and q is 0, Y_{417} is selected from the group consisting of $-NH-$, $-NH-SO_2\#191-R_{457}-SO_2\#191-NH-$, and $-NH-SO_2\#191-R_{467}-A_{427}-R_{477}-SO_2\#191-NH-$. By compound is meant either a small molecule or a repeat unit of a polymer. The invention also provides a solid polymer electrolyte membrane, a membrane electrode assembly, a gas diffusion electrode, an electrocatalyst coating composition, and a fuel cell.